1. Record Nr. UNINA9910677304703321

Titolo	Novel technologies in food science / / edited by Navnidhi Chhikara, Anil Panghal, and Gaurav Chaudhary
Pubbl/distr/stampa	Hoboken, New Jersey : , : John Wiley & Sons, , [2023] ©2023
ISBN	1-119-77637-6 1-119-77636-8
Descrizione fisica	1 online resource (657 pages)
Disciplina	664
Soggetti	Food - Biotechnology Food industry and trade
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover -- Title Page -- Copyright Page -- Contents -- Preface -- Chapter 1 Ultrasound -- 1.1 Introduction -- 1.2 Basic Principles of Ultrasound -- 1.2.1 Generation of the Ultrasonic Wave -- 1.2.2 Principles of Acoustic Cavitation -- 1.3 Mechanisms of Microbial Inactivation -- 1.4 Ultrasound Application in the Food Industry -- 1.4.1 Impact of Ultrasound on Physicochemical Quality Indicators of Food -- 1.4.1.1 Meat Products -- 1.4.1.2 Fruits and Vegetables -- 1.4.1.3 Dairy Industry -- 1.4.2 Effects of Ultrasound Treatment on Sensory Characteristics of Foods -- 1.5 Conclusion -- References -- Chapter 2 Pulse Electric Field: Novel Technology in Food Processing -- 2.1 Introduction -- 2.2 Principle -- 2.3 Electroporation -- 2.4 PEF System -- 2.5 Factors Affecting PEF -- 2.5.1 Process Factors -- 2.5.2 Food Matrix -- 2.5.3 Microbial Factors -- 2.6 Benefits and Shortcomings of PEF -- 2.7 Application in Food Industry -- 2.7.1 Drying -- 2.7.2 Food Preservation -- 2.7.3 Improvement of Extraction of Intracellular Compounds -- 2.8 Effect of PEF on Food Components -- 2.8.1 Proximate Composition -- 2.8.2 Other Components -- 2.8.3 Sensory Attributes -- 2.9 Conclusion -- References -- Chapter 3 An Overview of Membrane Technology in Dairy &amp -- Food Industry -- List of Abbreviations -- 3.1 Introduction -- 3.2 Terminology in Membrane Processing -- 3.2.1 Membrane -- 3.2.2 Permeate -- 3.2.3

Resistivity -- 5.2.4.7 Effect on Enzymes -- 5.3 Potential Applications of Magnetic Fields in Food Industry -- 5.3.1 Compositional Analysis -- 5.3.1.1 Water -- 5.3.1.2 Fat -- 5.3.1.3 Protein -- 5.3.2 Structure Analysis -- 5.4 Food Processing -- 5.4.1 Freezing -- 5.4.2 Drying -- 5.4.3 Frying -- 5.4.4 Fermentation -- 5.4.5 Extraction -- 5.4.6 Packaging -- 5.5 Quality Inspection -- 5.5.1 Fruits -- 5.5.1.1 Apples -- 5.5.1.2 Citrus Fruits -- 5.5.1.3 Kiwifruit.
5.5.2 Vegetables -- 5.5.2.1 Tomato -- 5.5.2.2 Potatoes -- 5.5.3 Cereal and Cereal Products -- 5.5.4 Seafood -- 5.5.5 Other Food Applications -- 5.6 Conclusion -- References -- Chapter 6 Microwaves Application to Food and Food Waste Processing -- 6.1 Introduction to Microwave Technology. Basis of Photon-Matter Interaction in the Microwave Range -- 6.2 Microwaves Applications to Food Process Monitoring -- 6.3 Microwaves in Food Processing -- 6.4 Microwaves Contribution to Food Waste Valorization Processes -- 6.4.1 Microwaves as A Pretreatment for Food Waste Transformation Into Biofuels and Other Value-Added Products -- 6.4.2 Microwaves Applied to the Recovery of Bio-Compounds from Food Wastes -- 6.5 Microwaves for Functional Food Development and Increased Bioaccessibility -- 6.6 Conclusions and Prospects -- References -- Chapter 7 Radio-Frequency Technology in Food Processing -- 7.1 Introduction -- 7.2 RF Technology and Principle -- 7.2.1 Types and Equipment -- 7.2.2 RF vs. Microwave (MW) Heating -- 7.3 Application of RF in Processing -- 7.3.1 Drying -- 7.3.2 Baking -- 7.3.3 Sterilization &amp -- Pasteurization -- 7.3.4 Roasting -- 7.3.5 Blanching -- 7.3.6 Thawing and Defrosting -- 7.3.7 Inhibition of Anti-Nutritional Factors -- 7.3.8 Disinfestation -- 7.4 Effect on Food Quality -- 7.4.1 Microbiological Quality -- 7.4.2 Nutritional Quality -- 7.5 Future Scope/Prospectus -- 7.6 Conclusion -- References -- Chapter 8 Ultrasound Technology in Food Processing: Technology, Mechanisms and Applications -- 8.1 Introduction -- 8.2 Mechanisms of Action of Ultrasound Technology -- 8.3 Equipment Used for Ultrasonic Applications -- 8.4 Selected Applications of Ultrasounds in Food Processing -- 8.4.1 Ultrasound-Assisted Extraction -- 8.4.2 Ultrasound-Assisted Fermentation -- 8.4.3 Ultrasound-Assisted Filtration -- 8.4.4 Ultrasound-Assisted Emulsification.
8.4.5 Ultrasound-Assisted Drying -- 8.4.6 Ultrasound-Assisted Freezing and Crystallization -- 8.5 Conclusions -- References -- Chapter 9 Irradiation of Food -- 9.1 Irradiation -- 9.1.1 Sources of Radiation -- 9.1.2 Dose Range &amp -- Dose Mapping -- 9.1.3 Packaging Material for Irradiation -- 9.2 Techniques for Food Irradiation -- 9.2.1 Gamma Rays Irradiators -- 9.2.2 Electron Beam Accelerators -- 9.2.2.1 Direct Methods -- 9.2.2.2 Induction Methods -- 9.2.2.3 Microwave or Radio-Frequency Methods -- 9.2.3 X-Rays (Bremsstrahlung) Irradiators -- 9.3 Wholesomeness of Irradiated Foods -- 9.4 Application of Irradiation on Different Food Commodities -- 9.4.1 Sanitation and Decontamination -- 9.4.2 Sprout Inhibition and Delay in Ripening -- 9.4.3 Insects and Pest Control -- 9.5 Advantages and Disadvantages of Irradiation of Food -- 9.5.1 Advantages of Food Irradiation -- 9.5.2 Disadvantages of Food Irradiation -- 9.6 Factors Affecting Irradiation of Food -- 9.6.1 Water Content -- 9.6.2 Temperature -- 9.7 Interaction of Ionizing Radiation and Food Components -- 9.8 Interaction of Ionizing Radiation and Biological Cells -- 9.9 Interaction of Ionizing Radiation and Food Packaging Materials -- 9.10 Detection and Risk Assessment -- 9.10.1 Detection of Irradiation -- 9.10.2 Risk Assessment of Irradiated Foods -- 9.11 Consumer Behavior Towards Irradiated Food -- 9.12 Standards, Regulations and Legislation on Food Irradiation -- 9.12.1 International Standards -- 9.12.1.1 Human Health -- 9.12.1.2 Labelling -- 9.12.1.3

	Plant Protection -- 9.12.1.4 Facilities -- 9.12.1.5 Dosimetry -- 9.12.1.6 Packaging -- 9.12.2 National Regulations -- 9.12.2.1 Regulations for Human Health -- 9.12.2.2 Regulations for Labeling -- 9.12.2.3 Regulations for Plant Health -- 9.13 Future Perspectives and Conclusions -- References -- Chapter 10 Active Packaging in Food Industry. 10.1 Introduction.
Sommario/riassunto	The main objective of this book is to disseminate knowledge about the recent technologies developed in the field of food science to students, researchers, and industry people. This will enable them to make crucial decisions regarding the adoption, implementation, economics, and constraints of the different technologies.Different technologies like ultrasonication, pulse electric field, high-pressure processing, magnetization, ohmic heating, and irradiation are discussed with their application in food product manufacturing, packaging, food safety, and quality assurance.